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Dated: 2/13/04

Signature:

*Joanne Ryan*  
(Joanne Ryan)

Docket No.: CTCH-P01-016  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Baltimore et al.

Application No.: 10/656531

Confirmation No.:

Filed: September 5, 2003

Art Unit: N/A

For: USE OF CHIMERIC NUCLEASES TO  
STIMULATE GENE TARGETING

Examiner: Not Yet Assigned

**INFORMATION DISCLOSURE STATEMENT (IDS)**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 CFR 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed before the mailing date of a first Office Action on the merits as far as is known to the undersigned (37 CFR 1.97(b)(3)).

A copy of each reference on the PTO/SB/08 is attached.


In accordance with 37 CFR 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR 1.56(a) exists. In accordance with 37 CFR 1.97(h), the filing of this Information Disclosure statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 CFR 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 18-1945, under Order No. CTCH-P01-016. A duplicate copy of this paper is enclosed.

Dated: Feb. 13, 2004

Respectfully submitted,

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<b>Substitute for form 1449A/B/PTO</b>  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)				<b>Complete if Known</b>	
				Application Number	10/656531
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Sheet	1	of	3	Attorney Docket Number	CTCH-P01-016

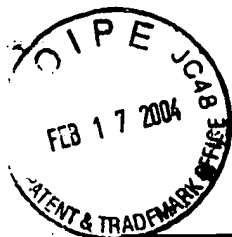
U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	AA	US-4,665,184	05-12-1987	Dervan, P. et al.	
	AB	US-4,795,700	06-03-1989	Dervan, P. et al.	
	AC	US-4,942,227	07-17-1990	Dervan, P. et al.	
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	AE	US-5,436,150	07-25-1995	Chandrasegaran, S.	
	AF	US-5,487,994	01-30-1996	Chandrasegaran, S.	
	AG	US-5,789,155	08-04-1998	Dervan, P. et al.	
	AH	US-5,792,640	08-11-1998	Chandrasegaran, S.	
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	AJ	US-6,007,988	12-28-1999	Choo, Y. et al.	
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	AL	US-6,140,466	10-31-2000	Barbas, C. et al.	
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	AO	US-6,453,242-B1	09-17-2002	Eisenberg, S. et al.	
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	AR	US-2002/0107214-A1	08-08-2002	Choulaka, A. et al.	
	AS	US-2002/0110898-A1	08-15-2002	Choulaka, A. et al.	
	AT	US-2003/0232410-A1	12-18-2003	Liljedahl, M. et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)				
	BA	WO-98/53058	11-26-1998	Medical Research Council		
	BB	WO-98/53059	11-26-1998	Medical Research Council		
	BC	WO-98/53060	11-26-1998	Medical Research Council		
	BD	WO-00/46385	08-10-2000	The Children's Medical Center Corporation		
	BE	WO-00/46386	08-10-2000	The Children's Medical Center Corporation		
	BF	WO-03/080809	10-02-2003	Stell		
	BG	WO-03/087341	10-23-2003	The University of Utah Research Foundation		

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NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>

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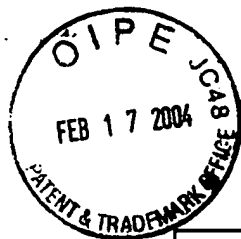


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Substitute for form 1449A/B/PTO			<b>Complete if Known</b>		
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Sheet	2	of	3	Attorney Docket Number	CTCH-P01-016

CA	Bibikova, M. et al. Stimulation of Homologous Recombination through Targeted Cleavage by Chimeric Nucleases. <i>Molecular and Cellular Biology</i> 21:1, 289-97 (2001)
CB	Bibikova, M. et al. Targeted Chromosomal Cleavage and Mutagenesis in <i>Drosophila</i> Using Zinc-Finger Nucleases. <i>Genetics</i> 161:1169-75 (2002)
CC	Bitinaite, J. et al. FokI dimerization is required for DNA cleavage. <i>Proc. Natl. Acad. Sci.</i> 95:10570-75 (1998)
CD	Brenneman, M. et al. Stimulation of intrachromosomal homologous recombination in human cells by electroporation with site-specific endonucleases. <i>Proc. Natl. Acad. Sci. USA</i> 93, 3608-12 (1996)
CE	Chandrasegaran S. et al. Chimeric Restriction Enzymes: What Is Next? <i>J. Biol. Chem.</i> 380:841-8 (1999)
CF	Chevalier, B. et al. Design, Activity, and Structure of a Highly Specific Artificial Endonuclease. <i>Molecular Cell.</i> 10:895-905 (2002)
CG	Choulika, A. et al. Induction of Homologous Recombination in Mammalian Chromosome by Using the I-SceI System of <i>Saccharomyces cerevisiae</i> . <i>Molecular and Cellular Biology.</i> 15:4, 1968-73 (1995)
CH	Cohen-Tannoudji, M. et al. I-SceI-Induced Gene Replacement at a Natural Locus in Embryonic Stem Cells. <i>Molecular and Cellular Biology.</i> 18:3, 1444-48 (1998)
CI	Desjarlais, J.R. et al. Toward rules relating zinc finger protein sequences and DNA binding site preferences. <i>Proc. Natl. Acad. Sci. USA</i> 89, 7345-49 (1992)
CJ	Donoho, G. et al. Analysis of Gene Targeting and Intrachromosomal Homologous Recombination Stimulated by Genomic Double-Strand Breaks in Mouse Embryonic Stem Cells. 18:7, 4070-78 (1998)
CK	Dreier, B. et al. Development of Zinc Finger Domains for Recognition of the 5'-ANN-3' Family of DNA Sequences and Their Use in the Construction of Artificial Transcription Factors. <i>Journal of Biological Chemistry.</i> 276:31, 29466-078 (2001)
CL	Elliott, B. et al. Gene Conversion Tracts from Double-Strand Break Repair in Mammalian Cells. <i>Molecular and Cellular Biology.</i> 18:1, 93-101 (1998)
CM	Elrod-Erickson et al. Binding Studies with Mutants of Zif268. <i>J. of Biol. Chem.</i> 274:27, 19281-85 (1999)
CN	Gorlich, D. et al. Nucleocytoplasmic Transport. <i>Science.</i> 271, 1513-18 (1996)
CO	Greisman, H. et al. A General Strategy for Selecting High-Affinity Zinc Finger Proteins for Diverse DNA Target Sites. <i>Science.</i> 275, 657-61 (1997)
CP	Hicks, G. et al. Three Classes of Nuclear Import Signals Bind to Plant Nuclei. <i>Plant Physiol.</i> 107:1055-58 (1995)
CQ	Huang, B. et al. Splase: A New Class IIS Zinc-Finger Restriction Endonuclease with Specificity for Sp1 Binding Sites. <i>Journal of Protein Chemistry.</i> 15:5, 481-89 (1996)
CR	Johnson, R.D. et al. Double-strand-break-induced homologous recombination in mammalian cells. <i>Biochemical Society Transactions</i> 29, 196-201 (2001)
CS	Khanna, K. et al. DNA double-strand breaks: signaling, repair and the cancer connection. <i>Nature Genetics.</i> 27:247-54 (2001)
CT	Kim, Y. et al. Chimeric restriction endonuclease. <i>Proc. Natl. Acad. Sci.</i> 91, 883-87 (1994)
CU	Kim, Y. et al. Chimeric Restriction Enzyme: Gal4 Fusion to FokI Cleavage Domain. <i>J. Biol. Chem.</i> 379, 489-5. (1998)
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CW	Li, L. et al. Alteration of the cleavage distance of Fok I restriction endonuclease by insertion mutagenesis. <i>Proc. Natl. Acad. Sci.</i> 90, 2764-68 (1993)
CX	Li, L. et al. Functional domains in Fok I restriction endonuclease. <i>Proc. Natl. Acad. Sci.</i> 89, 4275-79 (1992)
CY	Liu, Q. et al. Validated Zinc Finger Protein Designs for All 16 GNN DNA Triplet Targets. <i>J.</i>

Examiner Signature	Date Considered
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Sheet	3	of	3	

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	CZ	Mattaj, I. et al. Nucleocytoplasmic Transport: The Soluble Phase. Annu. Rev. Biochem. 67:265-306 (1998).	
	CA1	Nahon, E. et al. Targeting a truncated Ho-endonuclease of yeast to novel DNA sites with foreign zinc fingers. Nucleic Acids Research, 26:5, 1233-39 (1998)	
	CB1	Porteus, M. et al. Chimeric Nucleases Stimulate Gene Targeting in Human Cells. Science 300:763 (2003)	
	CC1	Rebar, E. et al. Zinc Finger Phage: Affinity Selection of Fingers with New DNA-Binding Specificities. Science. 263, 671-73 (1994)	
	CD1	Rouet, P. et al. Expression of a site-specific endonuclease stimulates homologous recombination in mammalian cells. Proc.Natl. Acad. Sci. 91, 6064-68 (1994)	
	CE1	Rouet, P. et al. Introduction of Double-Strand Breaks into the Genome of Mouse Cells by Expression of a Rare-Cutting Endonuclease. Molecular and Cellular Biology, 14:12, 8096-106. (1994)	
	CF1	Sargent, R. G. et al. Repair of Site-Specific Double-Strand Breaks in a Mammalian Chromosome by Homologous and Illegitimate Recombination. Molecular and Cellular Biology. 17:1, 267-77 (1997)	
	CG1	Segal, D.J. Endonuclease-induced, targeted homologous extrachromosomal recombination in Xenopus oocytes. Proc. Natl. Acad. Sci. 92, 806-10 (1995)	
	CH1	Segal, David J. Toward controlling gene expression at will: Selection and design of zinc finger domains recognizing each of the 5'-GNN-3' DNA target sequences. Proc. Natl. Acad. Sci. USA. 96, 2758-63 (1999)	
	CI1	Sera, T. et al. Rational Design of Artificial Zinc-Finger Proteins Using a Nondegenerate Recognition Code Table. Biochemistry. 41, 7074-81 (2002)	
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	CK1	Smith, F. et al. Double-strand breaks at the target locus stimulate gene targeting in embryonic stem cells. Nucleic Acids Research. 23:24, 5012-19 (1995)	
	CL1	Smith, J. et al. A detailed study of the substrate specificity of a chimeric restriction enzyme. Nucleic Acids Research, 27:2, 674-81 (1999)	
	CM1	Smith, J. et al. Requirements for double-strand cleavage by chimeric restriction enzymes with zinc finger DNA-recognition domains. Nucleic Acids Research, 28:17, 3361-69 (2000)	
	CN1	Taghian, D.G. et al. Chromosomal Double-Strand Breaks Induce Gene Conversion at High Frequency in Mammalian Cells. Molecular and Cellular Biology. 17:11, 6386-393 (1997)	
	CO1	Wah, D. A. et al. Structure of the multimodular endonuclease FokI bound to DNA. Nature 388: 97-100 (1997)	
	CP1	Wolfe, S.A. et al. Beyond the Recognition Code: Structures of Two Cys2His2 Zinc Finger /TATA Box Complexes. Structure. 9, 717-23 (2001)	
	CQ1	Wolfe, S.A. et al. DNA Recognition by Cys2His2 Zinc Finger Proteins. Annu. Rev. Biophys. Biomol. Struct. 3:183-212 (1999)	
	CR1	Yanez, R. et al. Therapeutic gene targeting. Gene Therapy. 5, 149-59 (1998)	
	CS1	Zufferey, R. et al. Woodchuck Hepatitis Virus Posttranscriptional Regulatory Element Enhances Expression of Transgenes Delivered by Retroviral Vectors. Journal of Virology. 73:4, 2886-92 (1999)	

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